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Millard, H. A. Schuette, chemistry; W. P. Gee, J. E. Wodsdalek, zoology; H. M. Helm, anatomy.

THE following appointments in scientific departments have been made at Northwestern University: Dr. George T. Hargitt, son of Professor Chas. W. Hargitt, instructor in zoology; William Logan Woodburn, instructor in botany; Dr. Charles D. Brooks, son of the late Professor William K. Brooks, instructor in mathematics.

THE University of Leeds has received £11,000 from various sources for the endowment of a professorship of applied chemistry relating to the coal industries, as a memorial to the late Sir George Livesey.

DR. FRANK BECHT, of the University of Chicago, has been appointed assistant professor and head of the department of physiology at the University of Illinois.

AT the University of Pennsylvania, Dr. G. H. Hallett has been promoted from an assistant professorship of mathematics to the rank of professor. Dr. M. J. Babb, Dr. G. G. Chambers and Dr. O. E. Glenn have been promoted from instructors to be assistant professors of mathematics.

DR. LEROY McMASTER has been advanced to the rank of assistant professor of chemistry at Washington University.

MR. J. K. JAMESON has been appointed to the chair of anatomy at Leeds, vacant by the resignation of Professor Griffith, who has accepted the professorship of medicine.

DISCUSSION AND CORRESPONDENCE

BOTANICAL GARDENS

TO THE EDITOR OF SCIENCE: While I am ready to subscribe to the ideas expressed in the Symposium on Botanical Gardens given before Section G of the American Association for the Advancement of Science, at the Boston meeting held December, 1909, and published in the April 29 issue of SCIENCE, I regret that the most important work was not sufficiently dwelt upon. The ecological, biological, morphological, physiological, esthetic and educational features of botanical gardens were

clearly set forth. This is, indeed, all well and good, but it leaves yet much to be done.

A botanical garden should be essentially experimental, dominated by an economical, practical method. All of the other features above indicated should be made subsidiary. In other words the botanical garden should have an economically commercial significance. Its chief function should be to develop the economic botanical resources of the country. To this end the garden should be divided into two distinct parts. In one should be carried on the purely experimental work—that is, experimental work having a practical significance. In the second part should be carried on test plantings on a practically economic commercial basis. Such gardens need not be large nor expensive, and they should be distributed geographically and climatologically, in order that the greatest good might be accomplished with a minimum of expenditure. The idea is in the main carried out by Kew with its substations and by the experimental stations of the U. S. Department of Agriculture, excepting that the monetary outlay involved is too great and the mistake is made of controlling substations from one central point. For example, nothing can be more absurd than a management in London directing affairs in India or in South America, or the authorities at Washington directing or controlling the experimental work in California, Florida or Texas. In fact, as far as the United States are concerned, each state should support, direct and control its own experimental work absolutely, with, of course, a cooperative relationship with the experimental gardens or stations of other states. A very efficient state garden of this kind does not require more than ten acres of ground, a propagating house, a tool shed, an office with store rooms, a competent director, one technical assistant, two or three skilled gardeners and the necessary additional equipment. The annual cost of maintaining such a garden in high operative efficiency need not exceed \$10,000. The financial gain to the state to be derived from such a garden would soon amount to millions of dollars annually. To

illustrate, at a cost of about \$10,000 it has been demonstrated experimentally how belladonna can be grown commercially in California. There is no plausible reason why California should not supply all or nearly all of the belladonna required in the United States, which may be estimated at about 1,000,000 pounds annually valued at \$150,000. This is merely one example which will however serve to explain the practical purpose of a botanical garden as above outlined. The probabilities are that from five to twenty-five practical tests would be carried on at one time and perhaps two or three tests would be concluded each year. From what has been said it is evident that the gardens should devote the major effort to establishing new plant industries and developing them. No time and effort should be wasted on useless things, as botanical freaks, botanical curios, purely technical research without practical significance, theoretical research and experiments, etc. Neither should time and effort be wasted on simple experiments which can be done by any agriculturist in any field or garden. Also, such gardens must be in charge of competent directors, men who by technical training and practical experience are qualified to direct such experiments as will bring practical net results in the shortest time possible.

ALBERT SCHNEIDER

CLASSIFICATION OF THE EDENTATES

DR. E. H. LANE, in "A Corrected Classification of the Edentates,"¹ has proposed the new ordinal name *Lepidota* for the *Manidæ*. That, like *Squamata* and *Pholidota*, was however long ago preoccupied (by Vogt in 1851), as was also *Cataphracta*, another designation proposed by J. E. Gray. *Squamigera*, having the same meaning, might be taken as a substitute, but such is scarcely necessary, as *Nomarthra* may be restricted to the suborder (or order) represented by *Manids* alone. I concur now with Weber, G. Elliot Smith, Gregory and Lane in thinking it inadvisable to combine the *Manids* and *Orycteropodids* in a group contrasted with the *Xenarthra*.

I can not consider the combination of

sloths and anteaters in a group distinct from the armadillos as an improvement in the taxonomy of the *Xenarthra*, and therefore the name *Pilosa* appears to me to be superfluous. Flower himself virtually confesses as much. The suborders *Tardigrada* and *Vermilinguia*, recognized by me in 1872, appear to be at least as distinct as are the "*Loricata*" from the *Tardigrada*.

If we are to apply the same rigorous rules to the nomenclature of the higher groups as to genera and species, "*Loricata* Flower" is another preoccupied name (unless accepted from Vicq d'Azyr) unusable for the armadillos and their relatives. Instead, *Cingulata* of Illiger (1811) might be revived as a subordinal term.

Vermilinguia of Illiger was long ago (1872) accepted as a subordinal designation for the anteaters.

Structural differences among the "*Loricata*" or *Cingulata* appear to be as great as (or greater than) those which have been used to distinguish families among the better-known carnivores, ungulates and rodents, and consequently have been recognized under the family names *Tatusiidae*, *Dasypodidae* and *Chlamyphoridae*. These have been indicated in the "Standard (or Riverside) Natural History."

Hoplophoridae (Huxley), 1864, appears to be retainable, *Glyptodontidae* not having been given till years after (1879). *Hoplophorus* (Lund, 1838) is not preoccupied, in the opinion of many, by *Hoplophora* (Perty, 1830).

There are other complications in the classification and nomenclature of the edentates which need not be considered at this time.

THEO. GILL

SCIENTIFIC BOOKS

Fungous Diseases of Plants. With Chapters on Physiology, Culture Methods and Technique. By BENJAMIN MINGE DUGGAR. Boston, New York, Chicago and London, Ginn & Co. 1909. Price \$2.00.

The appearance of an American book on plant pathology is a matter of great interest to a considerable circle of readers. For the

¹ SCIENCE, June 10, 1910, 913-914.